

Item #19: Forest Birds

Evaluation Objectives: Monitor forest bird distribution, productivity and survivorship across the Forest with established Region 1 Landbird Monitoring program.

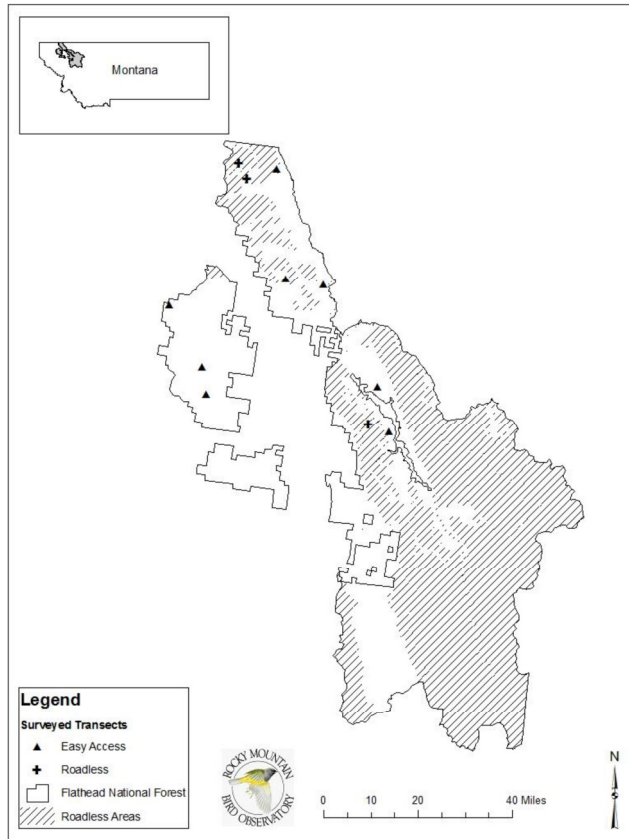
Methods: The forest participated in the Northern Region 1 region-wide landbird monitoring program that included using standard point-count survey routes, Monitoring Avian Productivity and Survivorship (MAPS), and single species habitat use and distribution surveys. Combining data from all forests in Region 1 permits an assessment of trends and habitat relationships over the entire region and provides a better indication of population changes in widely dispersed bird species for habitat relationships to possible land management practices. Each local unit (district/forest) benefits from the increased power of the regional data set, while saving on the time and money that would otherwise be spent planning and conducting their own monitoring programs.

Evaluation: The Forest Service entered two major partnerships for bird monitoring in the 1990s. One was with the Avian Science Center (ASC) at the University of Montana in 1994 when the Northern Region of the Forest Service (FS) initiated a Northern Region 1 region-wide landbird monitoring program (1994-2004) to help biologists and managers better understand the habitat relationships of landbirds breeding in this region. Additionally, the ASC also conducted or coordinated individual species habitat use and distribution surveys for flammulated owls, goshawks, and black-backed woodpeckers. A cooperative partnership also occurred with The Institute for Bird Populations which conducted a MAPS program in the Northern and Pacific Northwest Regions from 1992-2001. These methods, surveys and results were described in the previous 2007 monitoring report. After a review of the Landbird Program some modifications were recommended and applied with the Region now participating in the multi-agency, multi-state Integrated Monitoring of Bird Conservation Regions (IMBCR) effort.

Integrated monitoring of bird conservation regions

The following information is from the 2010 Annual IMBCR report completed by the Rocky Mountain Bird Observatory (RMBO). RMBO, in conjunction with its partners, conducted landbird monitoring in all or part of 7 bird conservation regions (BCRs) including 10 (Northern Rockies). This project used a spatially balanced sampling design and a survey protocol implemented in portions of 13 states in 2010 as part of the IMBCR program. The IMBCR design allows inferences to avian species occurrence and population sizes from local to BCR scales, facilitating conservation at local and national levels. This spatially-balanced sampling design serves as a model for other long-term monitoring efforts because of its ability to address the conservation and management needs of a wide range of stakeholders, landowners and government entities at both local and regional scales. The IMBCR design represents one method for achieving effective collaboration in North American bird monitoring and could be applied to other BCRs and regions across the continent.

Figure 17-1. Survey locations in FNF, 2010



The FNF is split into two strata, front-country, managed areas, and designated roadless and wilderness areas. This forest-level stratification distinction was made due to field implementation cost considerations and the desire to focus monitoring on the more highly managed areas while maintaining inference to the entire management unit. In this section of this report these two strata are combined to the administrative area of FNF. Field technicians surveyed 13 of 14 planned transects throughout FNF in 2010. Technicians conducted 91 point counts within the 13 transects (Figure 17-1) between 17 May and 14 July 2010. RMBO detected 76 species, including 6 priority species for FNF (Appendix D). RMBO estimated densities and population sizes for 54 species, 4 of which are priority species for FNF (Table 17-1). The data yielded robust density estimates ($CV < 50\%$) for 26 of these species. RMBO estimated the proportion of transects occupied (Ψ) by 37 species, 4 of which are priority species for FNF (Table 17-2). The data yielded robust occupancy estimates ($CV < 50\%$) for 18 of these species.

Montana statewide field technicians surveyed 211 of 213 planned transects in 2010. Technicians conducted 2,066 point counts within the 211 transects between 17 May and 25 July 2010. RMBO detected 202 species, including 35 priority species as designated by MTFWP.

Table 17-1. Estimated densities per km^2 (D), population sizes (N), percent coefficient of variation of estimates ($\% CV$) and number of independent detections (n) of breeding bird species in Flathead National Forest, 2010. Priority species are bolded.

	Flathead NF (Survey Transects = 13)			
Species	D	N	% CV	n
American Crow	0.13	1,454	45	2
American Kestrel	0.15	1,700	91	1
American Redstart	1.43	16,191	83	2
American Robin	28.86	327,658	30	33
American Three-toed Woodpecker	1.78	20,165	64	2
Black-capped Chickadee	8.14	92,390	61	6
Black-headed Grosbeak	1.47	16,636	52	5
Brewer's Blackbird	0.55	6,237	91	1
Brown Creeper	6.11	69,421	100	1
Cassin's Finch	4.67	53,002	44	8
Cassin's Vireo	3.20	36,281	48	9
Chipping Sparrow	52.56	596,786	26	53
Common Raven	0.45	5,144	43	7
Common Yellowthroat	1.90	21,518	91	6
Dark-eyed Junco	69.17	785,464	36	60
Dusky Flycatcher	7.02	79,745	42	12
Evening Grosbeak	1.40	15,881	45	3
Fox Sparrow	3.44	39,105	71	6
Golden-crowned Kinglet	146.06	1,658,552	36	24
Gray Jay	6.70	76,115	59	4
Hairy Woodpecker	15.09	171,381	36	16
Hammond's Flycatcher	9.11	103,408	59	8
Hermit Thrush	10.93	124,101	39	21
Lazuli Bunting	1.39	15,756	86	4
Lincoln's Sparrow	1.64	18,658	103	2
MacGillivray's Warbler	30.19	342,774	30	37
Mallard	0.16	1,873	85	1
Mountain Bluebird	8.04	91,345	56	11
Mountain Chickadee	26.26	298,234	36	25
Northern Flicker	2.98	33,785	20	18
Northern Harrier	0.13	1,456	87	1
Olive-sided Flycatcher	3.26	37,071	34	15
Orange-crowned Warbler	9.46	107,461	29	11
Ovenbird	1.36	15,476	83	4
Pine Grosbeak	7.21	81,902	82	4
Pine Siskin	90.47	1,027,298	28	47
Red Crossbill	14.69	166,847	55	11
Red-breasted Nuthatch	21.29	241,698	48	21
Red-naped Sapsucker	9.29	105,459	83	6
Red-tailed Hawk	0.78	8,877	75	3
Ruby-crowned Kinglet	42.01	477,038	15	54
Song Sparrow	1.77	20,080	71	5
Steller's Jay	0.93	10,567	70	4
Swainson's Thrush	52.20	592,685	28	86
Townsend's Solitaire	5.31	60,344	61	8
Townsend's Warbler	112.86	1,281,480	38	72
Varied Thrush	25.06	284,578	26	45

	Flathead NF (Survey Transects = 13)			
Species	D	N	% CV	n
Violet-green Swallow	10.99	124,790	76	11
Warbling Vireo	22.90	260,037	16	59
Western Tanager	12.94	146,964	28	33
Western Wood-Pewee	0.51	5,758	79	2
White-crowned Sparrow	0.92	10,465	86	2
Wilson's Warbler	46.03	522,619	70	13
Yellow-rumped Warbler	89.88	1,020,623	13	97

Table 17-2. Estimated proportion of sample units occupied (Psi), percent coefficient of variation of Psi (% CV) and number of transects with one or more detections (n Tran) of breeding bird species in Flathead National Forest, 2010. Dashes indicate the data were insufficient for estimating site occupancy. A Psi estimate equal to 1 indicates the species was detected on all transects surveyed. Priority species are bolded.

	Flathead NF (Survey Transects = 13)		
Species	Psi	% CV	n Tran
Brown Creeper	--	--	2
Calliope Hummingbird	--	--	2
Cassin's Finch	0.544	53	4
Cassin's Vireo	0.265	32	5
Cedar Waxwing	0.108	97	1
Chestnut-backed Chickadee	0.065	95	1
Common Yellowthroat	0.093	96	1
Dusky Flycatcher	0.158	48	3
Dusky Grouse	--	--	1
Evening Grosbeak	0.348	40	4
Golden-crowned Kinglet	--	--	10
Gray Jay	0.569	47	5
Hairy Woodpecker	--	--	10
Hammond's Flycatcher	0.652	39	7
Lazuli Bunting	0.055	95	1
Lincoln's Sparrow	0.060	95	1
MacGillivray's Warbler	0.845	24	9
Mountain Bluebird	0.225	39	4
Nashville Warbler	0.155	66	2
Northern Harrier	0.183	104	1
Northern Waterthrush	0.053	96	1
Olive-sided Flycatcher	0.685	39	6
Orange-crowned Warbler	0.352	25	6
Ovenbird	0.050	95	1
Pileated Woodpecker	0.214	67	2
Pine Grosbeak	0.433	60	3
Pine Siskin	0.959	6	11
Red Crossbill	0.471	46	5
Red-eyed Vireo	0.050	95	1
Red-naped Sapsucker	0.435	51	4

Ruby-crowned Kinglet	0.940	6	11
Rufous Hummingbird	0.217	66	2
Song Sparrow	0.131	63	2
Swainson's Thrush	0.929	6	11
Townsend's Solitaire	0.555	47	5
Townsend's Warbler	0.643	26	8
Veery	0.217	112	1
Warbling Vireo	0.716	24	9
White-winged Crossbill	0.494	61	3
Wilson's Warbler	0.630	44	6
Winter Wren	0.635	11	4

Other Landbird Work

The forest has work worked with 3 partnerships to learn more about migratory raptors, forest owls and forest restoration effects on birds. Beginning in 2008 the Kalispell office of the American Bird Conservancy (ABC) established the Jewel Basin Hawk Watch site. This site has great potential to assess the long-term health and status of all forest-dwelling diurnal raptors inhabiting the Rocky Mountains to the north of the observation point. Information collected could prove useful in evaluating long-term changes in raptor populations in respect to forest health and productivity. In addition, the site has good potential for public viewing and education being quite accessible to the residents of Flathead Valley and adjacent areas. Summary of the results so far are shown in Table 17-3.

Table 17-3. Jewel Basin Hawk Watch Site season totals by species

Species	Jewel Basin	Jewel Basin	Jewel Basin
Turkey Vulture	0	6	5
Osprey	6	19	8
Bald Eagle	30	25	41
Northern Harrier	36	62	46
Sharp-shinned Hawk	1,541	812	779
Cooper's Hawk	321	389	302
Northern Goshawk	35	30	50
Broad-winged Hawk	6	22	2
Swainson's Hawk	2	1	1
Red-tailed Hawk	178	152	173
Ferruginous Hawk	1	1	1
Rough-legged Hawk	17	1	41
Golden Eagle	390	240	474
American Kestrel	38	100	35
Merlin	24	31	21
Peregrine Falcon	13	6	16
Prairie Falcon	1	9	7
Total: All Raptors	2,741	2,010	2,113
Average Passage	114/100hr	74/100hr	87/100hr

The FNF has partnered with the Owl Research Institute (ORI) to study the northern hawk owl breeding ecology. The northern hawk owl is one of the least known owls in North America and northwest Montana is at the southern edge of the owl's breeding range. The study has collected information on breeding activities, nesting habitat, nest site characteristics, site fidelity, and natal philopatry. The formal partnership surveys on the FNF began in 2009. Glacier National Park has been surveyed since 1994. From these reports, ORI has been able to confirm 14 nest trees; two in 2010, four in 2007, six in 2006, one in 2005 and one in 1994. Thirteen nest trees were in the Park and one in the FNF. ORI has also banded 54 northern hawk owls. Six nests have been in a natural cavity, seven nests in a natural bowl and one in a woodpecker hole. The mean DBH of nest trees is 18 inches. The northern hawk owl appears to prefer post-fire habitat

In 2008, the ASC started conducting standard point-count surveys on the Meadow-Smith Old-growth restoration project. The Meadow-Smith project provided an opportunity for the ASC to collaborate on a project to study the effects of forest restoration treatments on bird communities as well as vegetation. The study site is comprised of forests that are predominately stands of old growth ponderosa pine / western larch. The ASC has collected 3 years of before-treatment data and will collect post-treatment data for 1-3 years. Analysis of the data will occur after the final post-treatment season. Table 17-4 displays a summary of three years of pre-treatment surveys. Brown creepers were detected throughout all breeding seasons which indicate the availability of suitable breeding habitat for this relatively old-growth dependent bird species.

Table 17-4. Total abundance of bird species detected in the Meadow-Smith point count surveys.

	2008	2009	2010
Number of Species	52	54	58
Number of Birds	2,235	1,658	1,957
Brown Creepers	18	21	20

Flammulated Owls

During the summer of 2005, the ASC initiated the first-ever Region-wide survey for Flammulated owls in Montana and North Idaho. Prior to this field season, Flammulated owls had not been adequately surveyed across Forest Service lands in this Region. These methods, surveys and results were described in the previous 2007 monitoring report. Flammulated owls were found on all forest except the Lewis and Clark, Gallatin, and Custer National Forests with the Nez Perce NF had the highest percentage of points with detections, followed by the Lolo, Helena, and Bitterroot Forests. Habitat for flammulated owl on the FNF is limited and restricted to drier ponderosa pine and Douglas fir sites. Identification and retention of suitable habitat conditions needs to be addressed at the project level.

Region 1 has produced the following documents and provided funding to the ASC for studies on flammulated owls.

[USDA, 2008 \(Updates for USDA, 2006, Conservation Assessment\) - Wildlife Habitat Estimate Updates for the Region 1 Conservation Assessment](#)

[Avian Science Center, 2005 - 2005 Flammulated Owl Surveys Final Report, Northern Region Landbird Monitoring Program](#)

[USDA, 2006 - A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service, September 06, 2006 \(see USDA, 2008 for updated habitat estimates\)](#)

[USDA, 2006 - Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher](#)

Black-backed Woodpeckers

From 2004-2007, the ASC studied the influence of local and landscape conditions on the occurrence and abundance of Black-backed Woodpeckers in burned forest patches in 17 separate fires in western Montana. This study was designed to uncover the response of black-backed woodpeckers to fires with varying pre-fire management history, fire severity, and post-fire salvage treatments within the mid-elevation mixed-conifer forest types. Many bird species are relatively common in burned forests, and some are relatively restricted to such conditions, with the black-backed woodpecker being more restricted to burned forest conditions than any of more than 100 other bird species for which we have sufficient data. Not only do some bird species clearly benefit from fire, as evidenced by their abundance in burned vs. unburned forest of the same habitat type, but some species are relatively abundant only in the lower severity patches, while others (in general, the species most restricted to burned forests) are relatively abundant only in the high-severity patches. Black-backs were found more in medium and high severity fires locations and in areas with no harvest or in unmanaged stands (Glacier National Park). Higher abundance of black-backed woodpeckers in burns suggests that populations are maintained by a patchwork of recently burned forests across the landscape. Burned forests are believed to act as source habitats from which birds emigrate once post-fire conditions become unsuitable.

Key findings include: 1) Evidence suggests the black-backed woodpecker is increasing in numbers in the United States. No demographic information exists to suggest a decline in black-backed woodpecker numbers. 2) Black-backed woodpecker habitat in the Northern Region is abundant and well distributed across the Region and by Forest. Distances between neighboring post-fire or bark beetle infested areas are all within 63 miles. 3) Habitat for the black-backed woodpecker has recently increased, and amounts are expected to increase as fires and bark beetle outbreaks continue to increase in size. 4) The level of salvage timber harvest of the forested landscape in the Northern Region is insignificant. 5) A comparison of habitat required for a minimum viable population to that available indicates well-distributed habitat far exceeds that needed, given the natural distribution of species and their habitats as mapped and according to the scientific literature (Samson 2006b).

Additional ASC research recently concluded with their single year study of not finding any significant populations of black-backed woodpeckers utilizing beetle outbreak areas. Their results suggest that in Northern Region forests Black-backed woodpeckers are relatively

uncommon at low densities and are almost entirely restricted to burned forests. Decision makers and biologists should continue to manage postfire forests with the black-backed woodpecker in mind during salvage proposals for retention of suitable habitat post-wildfire and subsequent salvage.

Region 1 has provided the following documents and provided assistance to the Avian Science Center for studies on black-backed woodpeckers.

[USDA, 2007 - Black-backed Woodpecker, Northern Region, Overview, Key Findings, and Project Considerations](#)

[USDA, 2008 \(Updates for USDA, 2006, Conservation Assessment\) - Wildlife Habitat Estimate Updates for the Region 1 Conservation Assessment](#)

[USDA, 2006 - A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service, September 06, 2006 \(see USDA, 2008 for updated habitat estimates\)](#)

[USDA, 2006 - Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher](#)

Goshawks

The previous monitoring report described the 2005 Northern Region field surveys. Based on the results of this survey, the frequency of goshawk presence in the accessible portion of R1 suggests that the goshawk is a relatively common and well-distributed avian predator in the Northern Region. However, since goshawk researchers have found no evidence that goshawks are declining in the western United States and Samson demonstrated that goshawk habitat was well-distributed and abundant in R1, the estimate of goshawk presence suggests that goshawks are abundant and well-distributed throughout the accessible portions of R1 National Forest System lands within Montana and Idaho during the breeding season. The goshawk was removed from the R1 Regional Forester's Sensitive Species List in 2007 based on the information gathered at the Regional levels but will be addressed at the project levels if habitat and species is present.

The estimate of goshawk presence suggests that goshawks are abundant and well-distributed throughout the accessible portions of R1 National Forest System lands within Montana and Idaho during the breeding season.

Region 1 has provided the following documents and studies for northern goshawks.

[USDA, 2008 \(Updates for USDA, 2006, Conservation Assessment\) - Wildlife Habitat Estimate Updates for the Region 1 Conservation Assessment](#)

[USDA, 2009 - Northern Goshawk, Northern Region Overview, Key Findings and Project Considerations](#)

[USDA, 2005 - Frequency of Northern Goshawk Presence in the Northern Region 2005 Survey](#)

[USDA, 2006 - A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service, September 06, 2006 \(see USDA, 2008 for updated habitat estimates\)](#)

[USDA, 2006 - Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher](#)

Landbird Monitoring Program 1994-2004

140 species have been observed on the FNF land bird monitoring transects. The primary outcome of a review of the Northern Region Landbird Monitoring Program was that it was a very efficient program that provided a solid baseline for long-term monitoring and a wealth of relevant data, yet it could provide better information for modeling bird distribution and abundance and could better inform management by adopting some changes in design and execution. The primary recommendations are to continue data collection with an emphasis on bird-habitat relationships, adopt a grid-based sampling design (possibly utilizing the Forest Inventory Assessment (FIA) system), and repeat individual point counts within season (2-3 times). This recommendation was applied and the Region is now participating in the multi-agency, multi-state Integrated Monitoring of Bird Conservation Regions (IMBCR) effort.

The Avian Science Center was recently awarded four-year grant from the USDA Managed Ecosystems Program to allow them to capitalize on the landbird monitoring database (which now includes information from more than 10,000 survey points scattered across the region to develop and validate habitat-based models for a large suite of species.

Monitoring avian productivity and survivorship 1992-2001 (MAPS)

These methods, surveys and results were described in the previous 2007 monitoring report. Three species showed significant declines (dusky flycatcher, warbling vireo and orange-crowned warbler) and 2 species showed increasing productivity trends (gray catbird and yellow warbler). According to the ASC landbird point-count data, the yellow warbler, warbling vireo, and dusky flycatcher are found 43%, 39%, and 31% of the time in riparian transects respectively. The most common FNF species were Swainson's thrush, dark-eyed junco, black-capped chickadee, MacGillivray's warbler, song sparrow cedar waxwing, common yellowthroat, and golden-crowned kinglet.

Summary

Partners in Flight 2010 Saving Our Shared Birds: Partners in Flight Tri-National Vision for Landbird Conservation mentions a loss of bird diversity and abundance. The USDI-FWS North American Bird Conservation Initiative: The State of the Birds, United States of America, 2009 report reveals declines of bird populations during the past 40 years—a warning signal of the failing health of our ecosystems but at the same time, saw evidence that strategic land management and conservation action can reverse declines of birds.

The FNF Forest Plan and management implementation programs address resource-management issues up front in the project planning stages by reducing or removing threats to wildlife or habitat. Standards that maintain or conserve habitats within the natural variability at the coarse landscape scale (riparian or old growth management) or those standards that protect individual species at the fine filter (bald eagles or peregrine falcons) will promote and conserve long-term avian diversity. Some species, such as the flammulated owl, are classified as endangered, threatened, or sensitive, and are evaluated and discussed in biological assessments or biological evaluations. Some migratory birds are covered by state hunting regulations; others are protected by non-game status by the Montana Department of Fish, Wildlife, and Parks. Hurteau et al. (2008), in a study in northern Arizona, recommend that given the difficulty of managing for many species with variable responses to forest manipulations, creating a mosaic of forest conditions following management treatments may be the most suitable approach for a wide range of forest passerines.

Recommended Action: Continue to support regional efforts to conduct surveys and monitoring of breeding birds with a multi-forest effort for stronger statistical analysis and defensibility. Utilize species and habitat relationships information from the ASC as it becomes available for project-level analyses. Capitalize on opportunities for partnerships with other agencies and non-government organizations.